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**(54) Rucksack hip pad arrangement**

Hüftpolster für einen Rucksack

Coussin de hanches pour sac à dos

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(56) References cited:  
**EP-A- 0 104 538** **DE-A- 3 918 346**  
**FR-A- 467 711** **FR-A- 2 586 539**  
**US-A- 4 504 002**

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## Description

This invention relates to a rucksack hip pad arrangement.

Modern large capacity rucksacks generally comprise a fabric sack, a supportive frame consisting of at least one substantially rigid vertical member mounted at the rear of the sack, a harness comprising shoulder pads, (often conjoined in the scapular region) mounted on the frame, and associated shoulder straps, a lumbar pad mounted to the sack or frame centrally, below the shoulder pads, and, at each side of the lumbar pads, respective hip pads, which merge into straps and connectors forming a hip belt.

A load within the sack is most efficiently and comfortably carried when a major proportion thereof is transmitted to the hips of the user via the hip pads, with the shoulder pads serving primarily a stabilizing function and transmitting only a minor proportion of load to the shoulders of the user. In this respect the front shoulder region especially is anatomically sensitive and subject to discomfort, and the entire shoulder region is prone to injury if overstressed.

Conventionally, in recent years, hip pads have been formed of flat pieces of foamed plastics material cut out from large sheets of material, and covered by a fabric envelope. In some cases the foamed plastics core has been shaped so that in use the hip pads and lumbar pad together take up a frusto-conical configuration, generally adapted to fit around the hip region of the user. In some cases stiffening has been provided, such as polypropylene plates onto which the hip pad cores have been mounted. In some cases there has been through stitching to give a quilted effect along with some compression and hence stiffening of the foamed plastics.

In general, however, despite these refinements the load has continued to be transmitted primarily by pressure directed inwardly of the pelvic region of the user. The resultant compression at the top of the iliac crest of the user is undesirable, and can result in injury and/or severe discomfort in the case of heavy loads.

In their International application WO 91/05493 the present applicants proposed a hip pad core of foamed plastics formed with a recessed region, extending to the lower edge of the pad, to fit over the hip of a user and thereby transmit a greater proportion of the load downwardly thereto. Although that has proved satisfactory in technical/anatomical terms, it has now become apparent that a considerable number of differently configured pads, i.e. pads formed with differently sized recesses in different positions will be required to suit the full range of variations in stature of potential users/customers for such rucksacks.

It is therefore an object of the present invention to provide an alternative hip pad arrangement whereby transmission of load downwards onto the pelvic girdle is enhanced while inward compression is reduced compared to previously known arrangements, which may be

required in only a small number of sizes to fit the entire range of user stature.

According to the present invention a rucksack comprising a fabric sack, a supportive frame including at least one substantially rigid vertical member mounted at the rear of the sack, a harness mounted on the rear of the sack or on the frame and comprising at least shoulder straps, and at least one hip or lumbar pad or belt mounted on the rear of the sack or on the frame below the harness, is characterised in that at least one device, serving as a wedge and having a first end portion which is broader than a second opposing end portion, is mounted with its broader end portion uppermost between the or each hip pad or lumbar pad or belt and the rear of the sack.

The invention also provides a hip belt, hip pad or lumbar pad for a rucksack, which has attached thereto at least one wedge device which has a first end portion broader than a second opposing end portion so that upon mounting of the hip belt, hip pad or lumbar pad onto a rucksack, said device lies therebetween orientated with its broader end portion uppermost.

The hip belt, hip pad or combined hip/lumbar pad may itself be of substantially constant thickness, as is conventional, or it may have a recessed surface towards the user's body, as disclosed in the applicants' earlier WO 91/05493. In the case of a pad provided with one or more recesses, when used with a wedge device in accordance with the invention, the recesses may conveniently be less pronounced, because they then have a less important function in ensuring downward load transmission.

In any event, with the arrangement of the invention, the wedge device presses the upper portion of the hip belt, hip pad or lumbar pad into close contact with the user's back just above the hip(s) and also onto the hip(s) from above, when the rucksack is properly mounted onto the user's back so as to ensure effective downward transmission of load to the hip(s).

The wedge device may advantageously consist of or include a wedge shaped element of resilient material, such as foamed plastics, preferably of closed cell type, to facilitate adaptation, in use, to the shape of the user's back. In such a case, the wedge device includes a more rigid portion, such as a web of substantially rigid plastics, to facilitate force transmission to the belt or pad and provide a surface against which the resilient material of the wedge shaped element can be resiliently pressed.

In practical embodiments of the invention the wedge shaped element may comprise one or more wedge shaped pieces of foamed plastics sandwiched between respective webs of substantially rigid plastics. The latter may be joined by a fold which permits flexure or by a hinge connection or a flexible reduced thickness web portion either at the narrow end of the device or at a position intermediate the top and bottom of the element.

Alternatively, the respective webs at either side of the foamed plastics may be configured to interfit with each other in a manner allowing relative movement ther-

between upon compression of the intervening foamed plastics material. For example, one or both of the webs may be curved or provided with limbs and/or edge flanges for engagement of the other web.

One or both of the plastics webs may be affixed to the adjacent surface of the foamed plastics.

One of the plastics webs may be connected in direct contact with the surface of the hip pad remote from the user, whilst the other of the plastics webs may have one or more slotted connector elements mounted thereon whereby the wedge shaped element and the hip pad is mounted onto the rucksack frame. These connections, to the hip pad on the one hand, and to the connector elements on the other hand, may be effected in any convenient manner, e.g. by rivets or screws, through the respective plastics webs or the entire wedge device and may be such that the hip pad is detachable from the wedge device.

In other embodiments, the wedge device may take a different form. It may, for example, consist of a wedge shaped element of substantially rigid material, in which case contouring of the surface thereof which is to face the hip belt may be appropriate to adapt to the required shape. In one preferred form the device may comprise a single piece of sheet plastics which has been moulded or vacuum formed to provide a hollow wedge shape with edge flanges of differing extent providing the broader and narrower end portions.

Specific practical embodiments of the invention will now be described, by way of example, by reference to the accompanying drawings, in which:

Fig. 1 is a schematic side perspective view illustrating a combined lumbar/hip pad belt with a wedge shaped element, in accordance with the invention, attached therebehind;

Fig. 2 is a schematic side view of a rucksack in accordance with the invention;

Fig. 3 is a more detailed exploded view of the same rucksack;

Fig. 4 is a side view, partially in cross section and to enlarged scale, illustrating another practical embodiment of wedge device, mounted on a rucksack in accordance with the invention;

Fig. 5 is a cross sectional view, along line 5-5 of Fig. 6, of another practical embodiment of wedge device mounted on a combined lumbar/hip pad belt;

Fig. 6 is a view of the rear of the device in the direction of arrow A in Fig. 5;

Fig. 7 is a plan view illustrating another practical embodiment of the invention comprising two wedge shaped elements mounted onto respective hip pads;

Fig. 8 is a partially sectional side view along line 8-8 of Fig. 7;

Fig. 9 is a side view, partially in cross section, illustrating another practical embodiment of wedge device, mounted on a rucksack in accordance with the invention;

Fig. 10 is a view similar to Fig. 9 of a further embodiment; and

Fig. 11 is a view similar to Fig. 9 of yet another embodiment.

Fig. 1 shows the generally preferred frusto-conical shape of a rucksack hip belt 10, the latter being the term which will be used for simplicity for this form of combined lumbar and hip pad. In practice, straps and connectors will be attached to the ends which confront each other and are connected together thereby at the front of a user's body. Also, the inner surface of the belt which contacts the user's body may be contoured. In accordance with the general concept of the invention, a wedge device 12 is shown attached behind the lumbar region of the belt 10. In its simplest form this device 12 consists of a single wedge shaped element which may be attached to the belt 10 by adhesive and/or fasteners or in some other suitable manner. The material of the wedge shaped element may be relatively resilient, such as foamed plastics, or substantially rigid, and in the latter case it may have a curving contoured surface contacting the belt. In any event the element 12 is oriented broadest end uppermost so that when the belt 10 is attached to a rucksack with the element therebetween the element 12 urges the upper edge margin of the belt 10 into contact with the user's body above the hips thereby transmitting load downwards from the sack onto the hips.

Fig. 2 shows an entire rucksack including fabric sack 14, vertical frame members 16, scapular pads 18 and shoulder pads 28. Fig. 3 shows more detail of this rucksack, particularly how two vertical frame members 16 are generally mounted onto a rear panel 20 of the sack 14 by means of upper and lower keepers 24, 26. The scapular pads 18, which extend to form the shoulder pads 28, are mounted onto these frame members 16, preferably in vertically slidable manner. Shoulder straps (not shown) are connected to the free ends of the shoulder pads 28 for connection in use, to a lower part of the sack 14. These features are all exemplary and are not essential to the invention. For ease of reference, the same reference numerals will be used to designate corresponding parts of rucksacks appearing in the other figures.

The wedge device 112 shown in Figs. 2 and 3 comprises a wedge shaped element 22 of foamed plastics material, preferably closed cell foamed plastics, mounted onto a web 23 of relatively rigid, yet flexible plastics, e.g. polypropylene or nylon 6. The web 23 has respective pairs of slotted portions 25 projecting from its

surface remote from the wedge shaped element 22 whereby the device 112 can be mounted onto the lower keepers 26 and frame members 16, the latter being insertable through the slots of both the portions 25 and the keepers 26.

In practice, the wedge device 112 is secured to the hip belt 10, for example by adhesion of the wedge shaped element 22 thereto or by fasteners extending through the element 22 and the web 23, or in any other suitable manner. The hip belt 10 with the device 112 is then releasably mountable onto the rucksack, in the manner already described in the preceding paragraph.

In Fig. 4, the wedge device 212 consists of relatively rigid plastics sheet material which has been formed with flanges of differing extent along opposing edges of a web portion 62, a short flange 60 providing the narrow end of the wedge shape and a longer flange 61 providing the broader end of the wedge shape, which in use of the device is oriented uppermost. The sheet material may also be formed with integral end walls so that, in effect, a hollow wedge is provided.

The aforesaid device 212 may be vacuum formed from polypropylene or injection moulded from suitable plastics material, such as polypropylene copolymers, nylon 6 or nylon 66. However, other plastics materials and methods of production may be employed.

As illustrated, the device 212 presents an open side towards the rucksack 14 and is mounted thereto by a pair of connectors 35 (only one of which is shown), which each carry two slotted portions 25 for interengagement with the slotted portions of keepers 26 and insertion of the frame members 16 therethrough. The connectors 35 are fastened to lateral extensions 37 of the device 212, which may be formed integrally therewith. The web portion 62 of the element 212, connecting to the hip belt 10, is formed with a curving contour to fit to the frusto-conical shape of the hip belt, although this is not apparent in the drawing. In the illustrated example, the hip belt 10 is shown provided with addition stiffening webs 11, 13, e.g. of polypropylene, and a lumbar pad extension 15. The web portion 62 of the element 212 may be connected to the web 11 by rivets, bolts, or adhesive or in any other suitable manner.

Numerous variations in the precise form of the aforesaid type of device and its manner of fixing to the belt and the sack are possible within the scope of the invention.

The wedge device 312 illustrated in Figs. 5 and 6 comprises relatively rigid plastics sheet material 70, such as polypropylene or nylon 6, which is formed into a complex profile, but basically has two limbs 72, 74 defining a V-shape, and a wedge-shaped element piece 71 of foamed plastics which is mounted within the space defined by that V-shape. At the base of the V the limbs 72, 74 converge at a fold 75 which provides a line of articulation, about which the limbs 72, 74 of the V are capable of flexing. Centrally, one limb 72 has an aperture 73 therethrough and the other limb 74 is formed with a projection 76 which extends through the foam wedge 71 and

through said aperture 73. As shown, the limb 74 is mounted by way of a stiffening web 78 to the hip belt 10 and the limb 72 has a pair of connectors 35 attached thereto for mounting onto the rucksack frame in the manner previously described. As indicated in Fig. 5, the foam wedge 71 may be adhered or otherwise secured to the inside of the limb 74 and in the unstressed condition of the device 312, i.e. when no pressure is exerted to push the limbs 72, 74 together by flexing about the fold 75, it may not fill the width of the V-shaped gap between the limbs 72, 74.

The embodiment illustrated in Figs. 7 and 8 comprises two wedge shaped elements 82, 84, each in the form of a solid block of plastics or metal. They are mounted onto a common support web 86, which carries connectors 35 for mounting onto a rucksack frame as previously described as well as an additional stiffening web 88. Faces of the respective blocks 82, 84 remote from the web 86 are secured to respective hip pads 101, 102 by way of stiffening webs 104, 106 of the hip pad.

In Fig. 9, the device comprises two substantially planar webs 30, 31 of relatively rigid, yet flexible plastics, e.g. polypropylene, held together by a hinge connection 32 along one edge, which is the lower edge in use, with a wedge shaped element 34 of resilient foamed plastics sandwiched therebetween. The first web 30 is attached to the hip belt 10 e.g. by rivetting, while the second web 31 is attached to two connectors 35 (only one of which is shown) possibly also by rivetting. Each connector 35 has two slotted portions 25 whereby the wedge device and the belt 10 are mounted onto the lower keepers 26 and the frame members 16 and hence onto the sack 14. In use the resilient foam wedge 34 is deformed to an appropriate extent to adapt to the shape of the user's back and allow load transmission through the device and belt 10 to the user's hip.

In Fig. 10 the device similarly comprises two substantially planar webs, designated 40, 41 in this case. These are held together by a central hinge connection 42 between respective ridges 45 which extend longitudinally of the facing surfaces of the webs 40, 41. Respective resilient wedge shaped elements 43, 44 of foamed plastics are located above and below the hinge connection. In other respects the device may be mounted by way of connectors 35 just as the Fig. 9 embodiment and will function in the same way.

It is apparent in Fig. 10 that each of the wedge shape elements 43, 44 need be attached to only one of the webs 40, 41. That is also the case in Fig. 9.

In both the foregoing embodiments the hinge connections 32, 42 could equally be replaced by flexible thin straps of plastics material, possible integrally formed with the respective webs 30, 31 or 40, 41.

In the device shown in Fig. 11 a wedge shaped element 53 of resilient foamed plastics is sandwiched between webs 50, 51 which are not held together by a hinged connection. Instead these webs 50, 51 are held together by one of the webs 51 being provided with upper and lower flanges 55 terminating in intumed lips 54

which engage behind the other web 50. In assembly the foam element 53 may be simply inserted into the channel provided by the web 51 and its flanges 55 and the other web 50 slid in from one end, behind the lips 54, or snapped in upon flexing of the web 51 and its flanges 55. In use, the same effect of compression of the foamed plastics element 53 and relative movement between the webs 50, 51 will take place to adapt the belt 10 for effective downward load transmission to the rucksack user's hips.

In all the foregoing examples, the webs or sheets of substantially rigid plastics need not be continuous, i.e. they could be perforated, slotted or recessed and they may be contoured so that they are not planar. Also instead of a single device or wedge shaped element, two or more may be provided side by side across the rear of the sack.

The manner of connection between the device and the hip belt, and between the device and sack may also vary from that disclosed. Although in the illustrated embodiments the device is generally indicated to be attached to the hip belt, the resulting unit then being mountable on to the rucksack, in other embodiments within the scope of the invention the device may be mounted onto the sack or its frame, and even permanently secured thereto, before the hip belt or hip or lumbar pad is connected.

#### Claims

1. A rucksack comprising a fabric sack (14), a supportive frame including at least one substantially rigid vertical member (16) mounted at the rear of the sack, a harness mounted on the rear of the sack or on the frame and comprising at least shoulder straps, and at least one hip or lumbar pad or belt (10) mounted on the rear of the sack or on the frame below the harness, characterised in that at least one device (12; 112; 212; 312; 82, 84; 30-35; 40-45, 50-55), serving as a wedge and having a first end portion which is broader than a second opposing end portion, is mounted with its broader end portion uppermost between the or each hip pad or lumbar pad or belt (10; 101, 102) and the rear of the sack (14).
2. A rucksack according to claim 1 wherein the device consists of or includes at least one wedge shaped element (12; 22; 71; 34; 43, 44; 53) of resilient material.
3. A rucksack according to claim 2 wherein the device additionally includes a web or webs (23; 72, 74; 30, 31; 40, 41; 50, 51) of relatively rigid or stiff material providing a surface against which the resilient material (22; 71; 34; 43, 44; 53) can be resiliently pressed.
4. A rucksack according to claim 3 wherein a line of articulation (75; 32) between respective webs (72, 74; 30, 31) of relatively rigid or stiff material is provided at the narrower end portion of the device (312; 30-35) with the wedge shaped element(s) (71; 34) mounted between said webs.
5. A rucksack according to claim 3 wherein the device comprises one or more wedge shaped elements (71; 34; 43; 44; 53) of foamed plastics material sandwiched between respective webs (72, 74; 30, 31; 40, 41; 50, 51) of substantially rigid plastics material.
6. A rucksack according to claim 1 wherein the device (212) consists of relatively rigid plastics sheet material formed with flanges (61, 60) of differing extent at opposing sides of a web portion (62), said flanges providing the broader and narrower end portions.
7. A rucksack according to claim 1 wherein the device (82, 84) consists of or includes at least one wedge-shaped element of substantially rigid material.
8. A rucksack according to any preceding claim wherein the device is provided with slotted connector elements (35) whereby it is releasably connected to the rucksack frame (16) and the fabric sack (14).
9. A rucksack according to any preceding claim wherein the device is connected to said at least one substantially rigid vertical member.
10. A rucksack hip belt, hip pad or lumbar pad (10) having attached thereto at least one wedge device (12; 112; 212; 312; 82, 84; 30-35; 40-45, 50-55), which has a first end portion broader than a second opposing end portion so that upon mounting of the hip belt, hip pad or lumbar pad onto a rucksack, said device lies therebetween orientated with its broader end portion uppermost.

#### Patentansprüche

1. Rucksack, umfassend einen Stoff- bzw. Gewebesack (14), einen Stützrahmen mit zumindest einem im wesentlichen starren und auf der Hinterseite des Sacks montierten vertikalen Element (16), ein auf der Hinterseite des Sacks oder auf dem Rahmen montiertes und zumindest Schulterriemen umfassendes Geste und zumindest einen auf der Hinterseite des Sacks oder auf dem Rahmen unterhalb des Gestells montierten Hüft- oder Lendenpolster bzw. -gurt (10), dadurch gekennzeichnet, daß zumindest eine Vorrichtung (12; 112; 212; 312; 82, 84; 30 - 35; 40 - 45, 50 - 55), die als Keil dient und einen ersten Endabschnitt besitzt, der breiter als ein zweiter gegenüberliegender Endabschnitt ist, solcherart zwischen dem oder jedem Hüftpolster oder Lendenpolster bzw. -gurt (10; 101, 102) und der Hinterseite des Sacks (14) angebracht ist, daß ihr breiterer Endabschnitt zuoberst liegt.

2. Rucksack nach Anspruch 1, worin die Vorrichtung aus zumindest einem keilförmigen Element (12; 22; 71; 34; 43, 44; 53) aus elastischem Material besteht oder zumindest ein derartiges Element enthält.
3. Rucksack nach Anspruch 2, worin die Vorrichtung zusätzlich einen oder mehrere Stege bzw. Flächen (23; 72, 74; 30, 31; 40, 41; 50, 51) aus relativ starrem oder steifem Material enthält, wodurch eine Oberfläche gebildet wird, gegen die das elastische Material (22; 71; 34; 43, 44; 53) elastisch gedrückt werden kann.
4. Rucksack nach Anspruch 3, worin eine Gelenklinie (75; 32) zwischen jeweiligen Stegen bzw. Flächen (72, 74; 30, 31) aus relativ starrem oder steifem Material am schmäleren Endabschnitt der Vorrichtung (312; 30 - 35) vorgesehen ist, wobei das oder die keilförmige(n) Element(e) (71; 34) zwischen den Stegen montiert ist bzw. sind.
5. Rucksack nach Anspruch 3, worin die Vorrichtung ein oder mehrere keilförmige Elemente (71; 34; 43; 44; 53) aus geschäumtem Kunststoffmaterial umfaßt, das/die zwischen jeweiligen Stegen (72, 74; 30, 31; 40, 41; 50, 51) aus im wesentlichen starrem Kunststoffmaterial angeordnet ist/sind.
6. Rucksack nach Anspruch 1, worin die Vorrichtung (212) aus relativ starrem Kunststoffplattenmaterial besteht, das mit Flanschen (61, 60) unterschiedlicher Ausdehnung an gegenüberliegenden Seiten eines Stegabschnitts (62) versehen ist, wobei die Flansche die breiteren und schmäleren Endabschnitte bilden.
7. Rucksack nach Anspruch 1, worin die Vorrichtung (82, 84) aus zumindest einem keilförmigen Element aus einem im wesentlichen starren Material besteht oder zumindest ein derartiges Element enthält.
8. Rucksack nach einem der vorhergehenden Ansprüche, worin die Vorrichtung mit geschlitzten Verbindungselementen (35) versehen ist, wodurch sie lösbar mit dem Rucksackrahmen (16) und dem Stoffsack (14) verbunden ist.
9. Rucksack nach einem der vorhergehenden Ansprüche, worin die Vorrichtung mit zumindest einem im wesentlichen starren vertikalen Element verbunden ist.
10. Hüftgurt, Hüftpolster oder Lendenpolster (10) für einen Rucksack mit zumindest einer daran befestigten Keilvorrichtung (12; 112; 212; 312; 82, 84; 30 - 35; 40 - 45, 50 - 55), die einen ersten Endabschnitt besitzt, der breiter als ein zweiter gegenüberliegender Endabschnitt ist, sodaß beim Montieren des Hüftgurts, Hüftpolsters oder Lendenpolsters an

einem Rucksack die bzw. diese Vorrichtung dazwischen positioniert ist, wobei ihr breiterer Endabschnitt zuoberst liegt.

## 5 Revendications

1. Sac à dos comprenant un sac en tissu (14), un châssis de support incluant au moins un élément vertical sensiblement rigide (16) monté à l'arrière du sac, un harnais monté sur l'arrière du sac ou sur le châssis et comprenant au moins des bandes d'épaule, et au moins un coussin ou ceinture lombaire ou de hanche (10) monté sur l'arrière du sac ou sur le châssis en dessous du harnais, caractérisé en ce qu'au moins un dispositif (12 ; 112 ; 212 ; 312 ; 82, 84 ; 30-35 ; 40-45 ; 50-55) servant de coin et présentant une première portion d'extrémité qui est plus large qu'une deuxième portion d'extrémité opposée est monté de façon que sa portion d'extrémité plus large soit en haut entre le ou chaque coussin de hanche ou coussin ou ceinture lombaire (10 ; 101, 102) et l'arrière du sac (14).
2. Sac à dos selon la revendication 1, dans lequel le dispositif est constitué d'un ou inclut au moins un élément en forme de coin (12 ; 22 ; 71 ; 34 ; 43, 44 ; 53) en matière élastique.
3. Sac à dos selon la revendication 2, dans lequel le dispositif inclut additionnellement une ou des bandes (23 ; 72 ; 74 ; 30, 31 ; 40, 41 ; 50-51) en une matière relativement rigide ou raide réalisant une surface contre laquelle la matière élastique (22 ; 71 ; 34 ; 43, 44 ; 53) peut être poussée élastiquement.
4. Sac à dos selon la revendication 3, dans lequel une ligne d'articulation (75 ; 32) entre des bandes respectives (72, 74 ; 30, 31) en une matière relativement rigide ou raide est prévue à la portion d'extrémité plus étroite du dispositif (312 ; 30-35), le ou les éléments en forme de coin (71 ; 34) étant montés entre lesdites bandes.
5. Sac à dos selon la revendication 3, dans lequel le dispositif comprend un ou plusieurs éléments en forme de coin (71 ; 34 ; 43 ; 44 ; 53) en mousse de matière plastique pris en sandwich entre les bandes respectives (72, 74 ; 30, 31 ; 40, 41 ; 50, 51) en matière plastique sensiblement rigide.
6. Sac à dos selon la revendication 1, dans lequel le dispositif (212) est constitué d'une feuille plastique relativement rigide présentant des rebords (61, 60) d'étendue différente aux côtés opposés d'une portion de bande (62), lesdits rebords réalisant les portions d'extrémité plus large et plus étroite.
7. Sac à dos selon la revendication 1, dans lequel le dispositif (82, 84) est constitué d'un ou inclut au

moins un élément en forme de coin en matière sensiblement rigide.

8. Sac à dos selon l'une des revendications précédentes, dans lequel le dispositif présente des éléments de connexion à fente (35) par quoi il est relié amoviblement au châssis (16) du sac à dos et au sac en tissu (14). 5
9. Sac à dos selon l'une des revendications précédentes, dans lequel le dispositif est connecté audit élément vertical sensiblement rigide, dont au moins un est prévu. 10
10. Ceinture de hanche, coussin de hanche ou coussin lombaire de sac à dos (10) auquel est fixé au moins un dispositif formant coin (12 ; 112 ; 212 ; 312 ; 82, 84 ; 30-35 ; 40-45 ; 50-55) dont une première portion d'extrémité est plus large qu'une deuxième portion d'extrémité opposée de telle sorte que lors du montage de la ceinture de hanche, du coussin de hanche ou du coussin lombaire sur un sac à dos, ledit dispositif se situe entre celles-ci et sa portion d'extrémité plus large se trouve en haut. 15  
20  
25  
30  
35  
40  
45  
50  
55

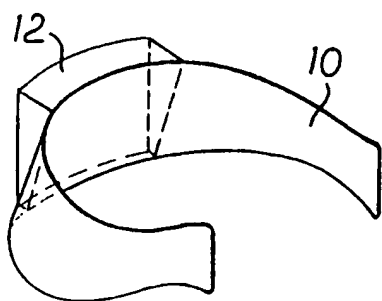


Fig. 1

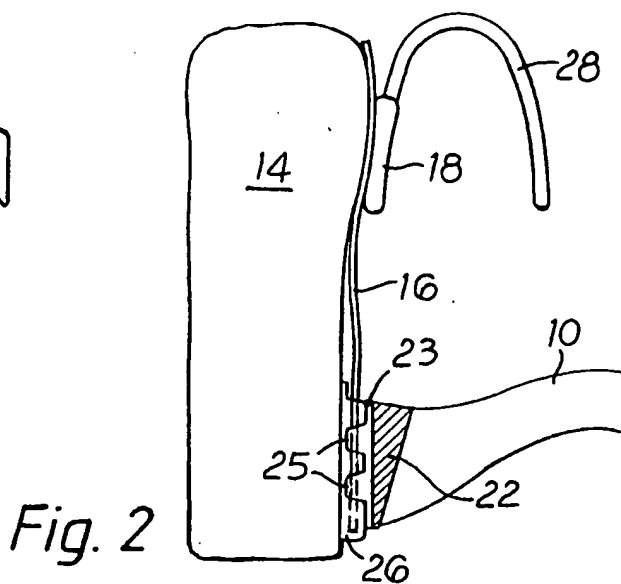


Fig. 2

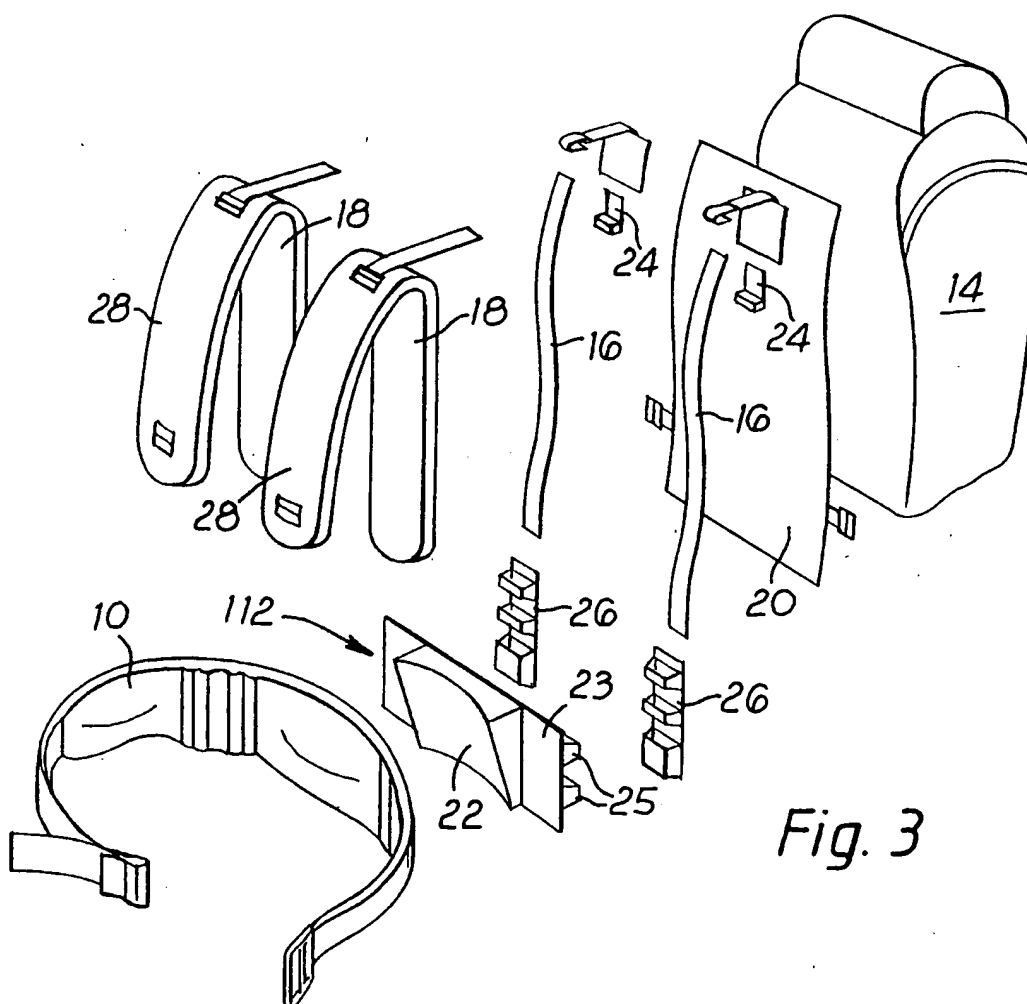


Fig. 3



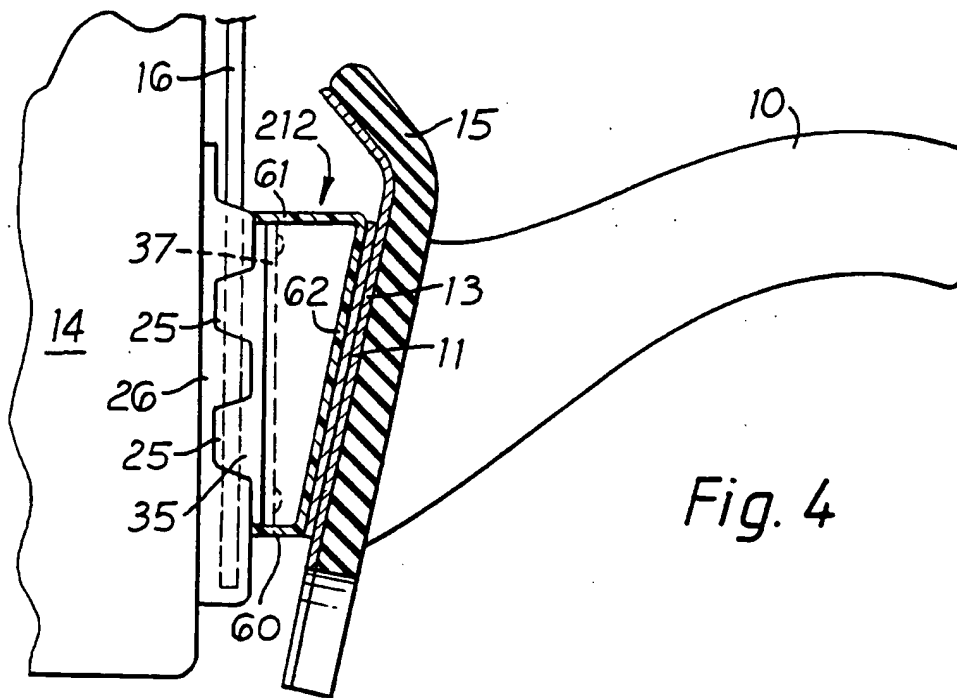


Fig. 4

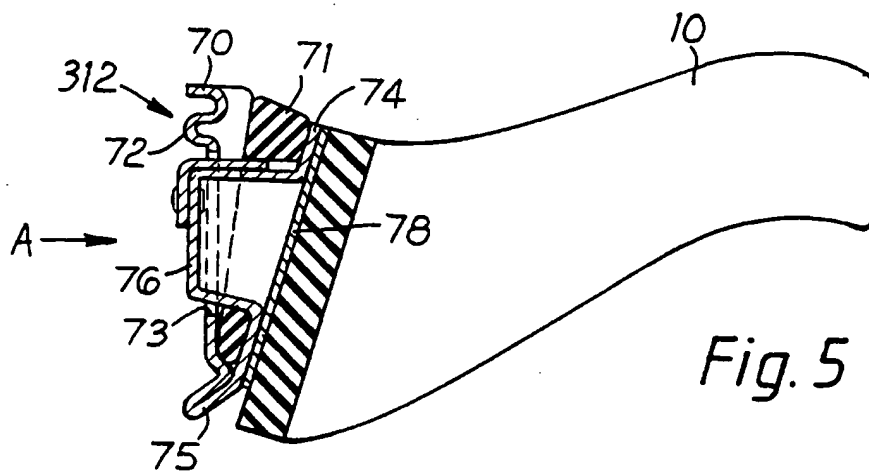


Fig. 5

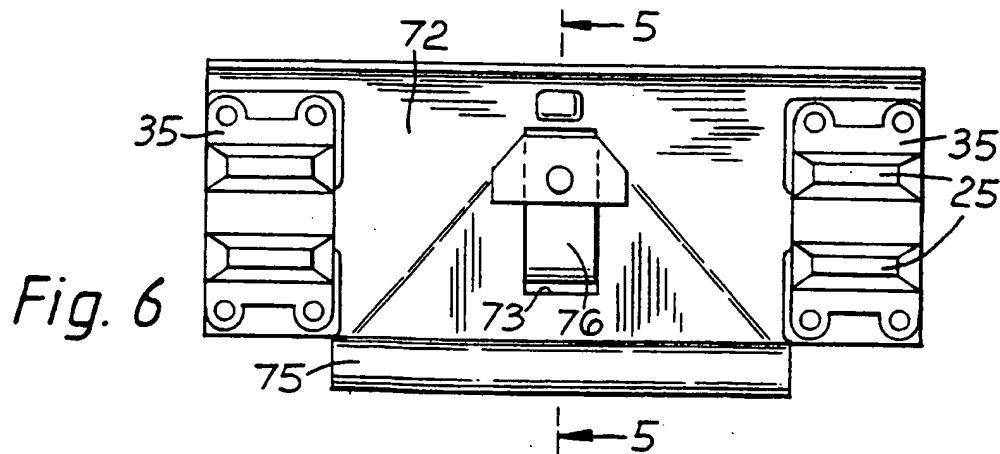
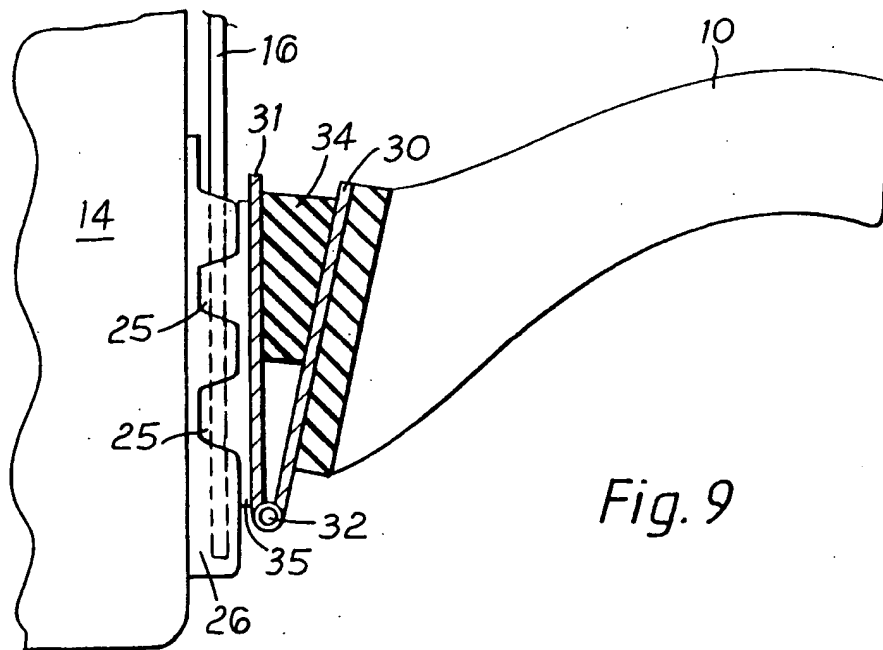
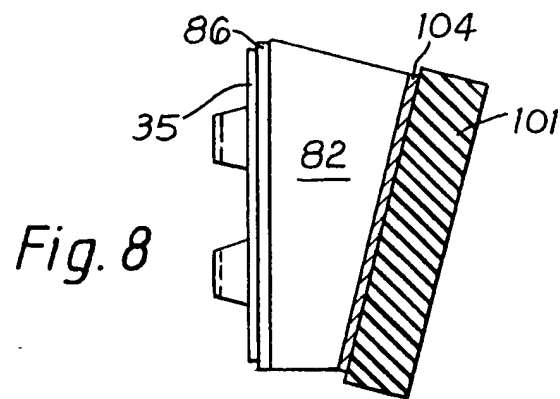
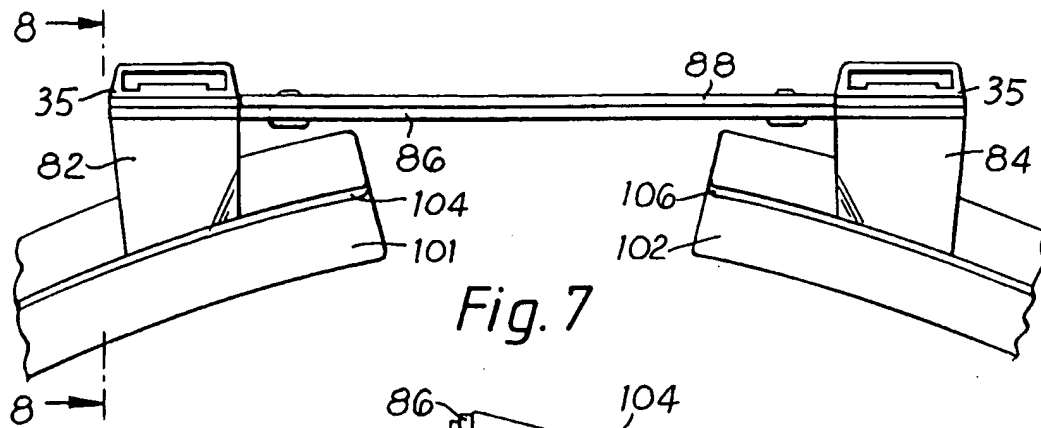
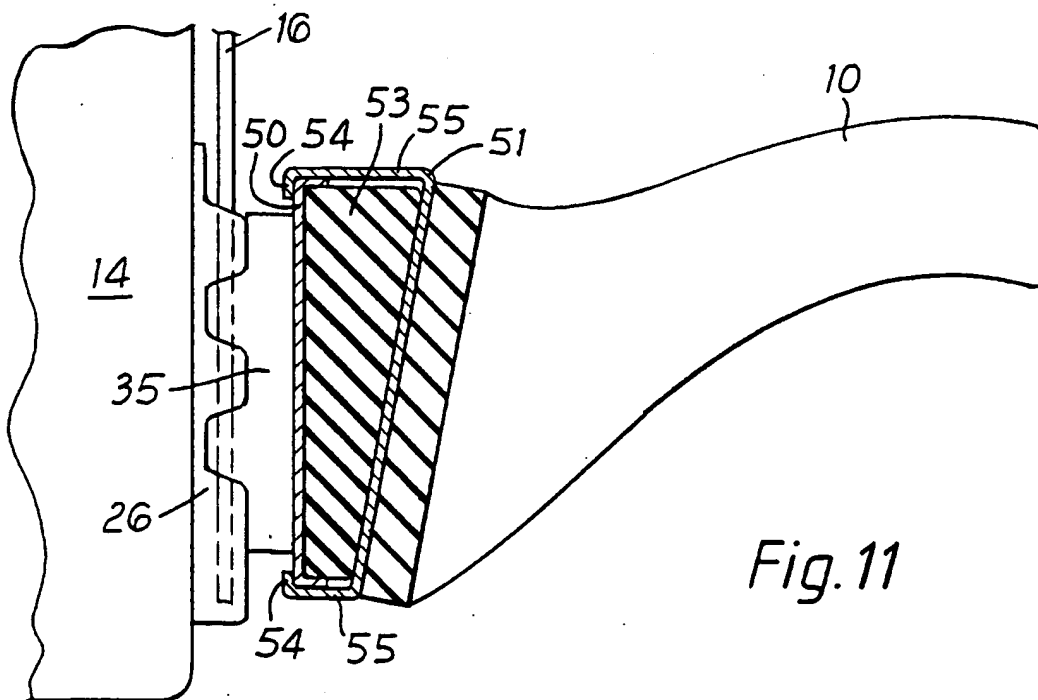
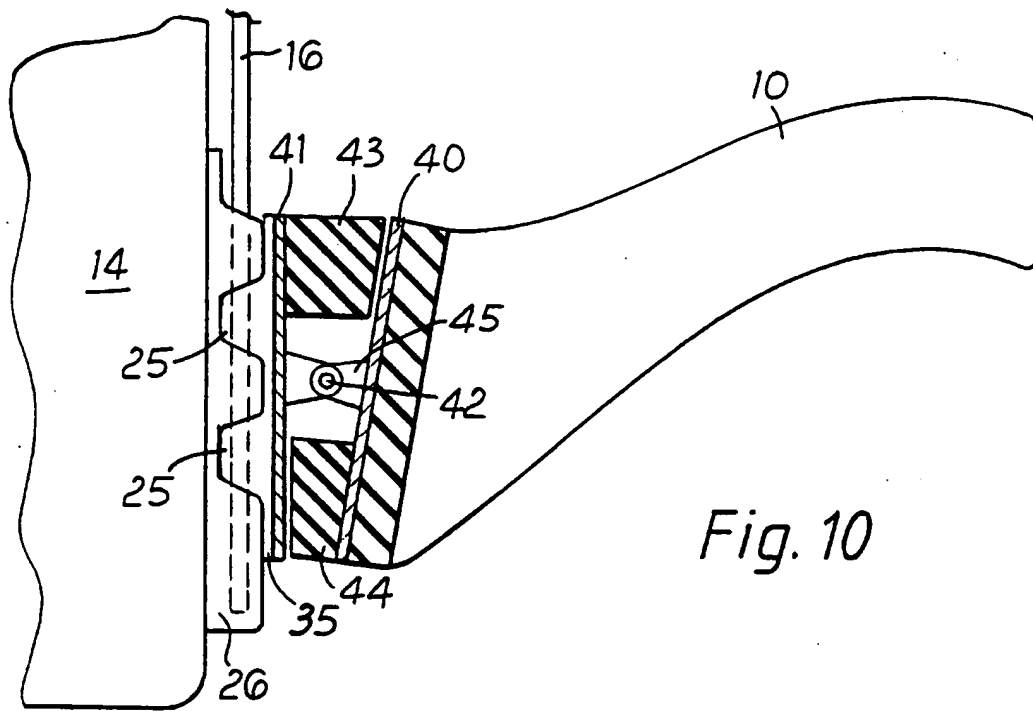


Fig. 6





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